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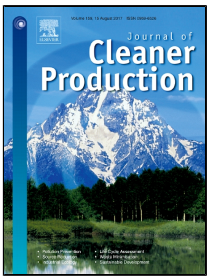

Public healthcare practices and criteria for a sustainable procurement: A comparative study between UK and Italy

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Public healthcare practices and criteria for a sustainable procurement: A comparative study between UK and Italy

Abstract

The Health sector can play a significant role towards achieving sustainable development by putting sustainability at the heart of procurement activities. This research analyses the differences relating to how two different National Healthcare Systems (NHS), the Italian and the British, are managing their Sustainable Public Procurement (SPP) in terms of supplier's and bidders' sustainable evaluation through specific practices and criteria. The research mainly adopts quantitative inquiry using a survey with procurement professionals from public sector healthcare organisations. A Likert's scale questionnaire was designed to test seven hypotheses covering SPP criteria analysed using Fisher's Exact and Mann-Whitney U tests. While the UK health sector organisations seem to have a propensity for requesting suppliers with an improvement in environmental performances over time and a compliance with voluntary social accountability standards, the Italian organisations seem more focused on the mandatory laws and regulations concerning environment and safety. Other interesting differences lie in the requests to the suppliers of the compliance with voluntary standards related to packaging. The research is just limited to two countries; future studies aimed at comparing SPP criteria for the public healthcare among the other European countries is recommended. Moreover, the findings raised issues such as the trade-off between costs of the product and environmental criteria, the use of national and international standards as supplier's evaluation criteria, the carbon footprint as a way for gaining more trust from local stakeholders and the possible impact of suppliers' ethical scandals in the public sector.

Keywords: Sustainable Public Procurement; European healthcare; Public Sector; NHS; Supplier's evaluation criteria

1. Introduction

Sustainable Public Procurement (SPP) is a strategic issue that has increased its popularity in the last decades (Kumar *et al*., 2008). In the private sector, organisations have dealt with sustainability for procurement and suppliers mainly on a voluntary basis (Beckmann, 2014; Chiarini, 2014, Quarshie *et al*., 2016). In order to develop a sustainable supply chain, private organisations have implemented performance standards as well as international standards and guidelines (Ciliberti *et*

al., 2011). Principally, private sector organisations adopt sustainable procurement because they are motivated by possible economic and financial returns for the business (Meehan and Bryde, 2011; Reuter *et al*., 2012; Willard, 2012; Sierra-García et al., 2015; Cherrafi *et al*., 2016). Indeed, there are several models for measuring the achieved performance underpinned by economic and financial results. For instance, the well-known Triple Bottom Line model (Elkington, 1994) made up of three determined pillars for sustainability, economic, environmental, and social aspects of organisations' performance can be measured with reference to these pillars (Henriques and Richardson, 2013).

By the same token, public sector in the last decades has fostered sustainable procurement practices following similar models or models in accordance with institutions and governments laws and regulations (Rainville, 2016). Public procurement represents a significant part of the GDP most industrialized countries (Ball *et al*., 2014). According to the European Commission (2015), government purchases of goods or services accounts for about 18 percent of European Union (EU) GDP and in some countries, like Italy, its value increased until the 2010 economic crisis. Within the public sector surely a large part of purchases is bound to the public healthcare system.

In such a scenario, many citizens and taxpayers at the same time are concern about the amount and the typology of public expenditure in terms of public procurement. Economic and financial issues surely represent a fundamental concern for the majority of citizens, in any event many citizens' groups and movements are also interested in SPP (Thomson and Jackson, 2007; Walker and Brammer, 2009; Testa *et al*., 2012; Akhavan, and Beckmann, 2016; Brewer and Arnette, 2016).

One of the most pursued SPP strategies from the EU is promoting the use of green, social and innovative procurement (Amann *et al*., 2014; European Commission, 2015); this in particular includes green energy and transports, carbon footprint, buying social and other aspects. However, the European Commission (2008) pointed out how there are many difficulties in setting common SPP criteria among the different EU countries. For instance, in regards to the Green Public Procurement (GPP), the European Commission admits that there is no common criteria across the EU; essentially individual countries are required to have its own criteria and databases for green public procurement (European Commission, 2008:14).

In this light, the paper critically examines the differences in terms of sustainable public healthcare procurement practices and criteria between the UK and Italy. Specifically, this research analyses the differences related to how the two different National Healthcare Systems (NHS), the Italian and the British, evaluate suppliers' and bidders' sustainable performance through specific

criteria. Seven different criteria in terms of sustainable procurement performance have been transformed into hypotheses for a survey carried out in both countries. The hypotheses have been tested through a Fisher's Exact and a Mann-Whitney tests to help understand whether there are differences in the statistical results given to the specific hypothesis by each country. The cornerstone of the survey is represented by a questionnaire with seven questions that has been administered to a sample of 64 Italian and British public hospitals.

The rest of the paper is structured as follows; the next section deals with the literature review dedicated to SPP and the NHS SPP practices and criteria in the UK and Italy. In this way, the research questions are linked to the literature review and the NHS situations contribute to the stated seven research hypotheses that were tested. The methodology section explains the survey design and what kinds of quantitative inquiries have been employed, discussing in particular why the Fisher's Exact and Mann-Whitney tests have been chosen between the several hypothesis tests. Seven sub-sections are dedicated to the analysis and discussion of the results from the administrated questionnaires, using also the qualitative responses left by respondents. Lastly, the conclusions section presents the results, the novelties, the practical implications from the research, as well as the areas for further research.

2. Sustainable Public Procurement

Over the last decade, Sustainable Public Procurement (SPP) has become of growing interest among scholars. SPP has been debated through theoretical and specific case study papers. According to Brammer and Walker (2011), SPP has been mainly taken into account by the public sector in order to stimulate the private market towards sustainability and creating awareness on the subject.

While there is no single definition for Sustainable Procurement, the UK Government's Sustainable Procurement Task Force define Sustainable Procurement "as a process whereby organisations meet their needs for goods, services, works and utilities in a way that achieves value for money on a whole life basis in terms of generating benefits not only to the organisation, but also to society and the economy, whilst minimising damage to the environment" (DEFRA, 2006:10).

Steurer *et al*. (2007) investigated the development of green and sustainable procurement in 27 EU members. The results of this research showed that, nine countries, including the UK and Italy were developing action plans linked to SPP. However, according to Steurer *et al*. (2007), within the

EU the majority of the initiatives are linked to mandating, informational or endorsing instruments, while financial or economic instruments are hardly taken into consideration.

Mandating, informational and endorsing instruments are typically based on laws, regulations, standards and guidelines as discussed by several other authors in their papers. For instance, Uttam, and Roos (2015), Rainville (2016) as well as Testa *et al*., (2016) discussed the importance of laws, regulations, guidelines and standards for SPP. In any case, laws, regulations and standards for SPP referred to criteria which can have a different degree of sustainability depending on the country and the specific public organisation (Aschhoff and Sofka, 2009; de Vries and Huijsman, 2011; Gutman, 2015; Grandia, 2016).

SPP typically has different objectives through the purchasing and supply chain process and involves balancing environmental, social and economic objectives (Walker and Philips, 2008). In this light, there are different studies in literature which deals with different practices and criteria. A first relevant line proposes that SPP is strictly bound to green procurement criteria (Parikka-Alhola, 2008; Testa *et al*., 2012; Pacheco-Blanco and Bastante-Ceca, 2016; Rainville, 2016). Other authors focused on other relevant criteria. For instance, the work of McCrudden (2004) concentrated on the use of SPP to achieve social outcomes. The author pointed out how public procurement has been used for achieving environmental goals and in the last period has been linked also to social goals. In several countries, including some European ones, it seems that social criteria have been used by public organisations to foster and bolster results in terms of discriminations, human rights, labour standards and employment.

According to González and Martinez (2004), all around Europe, public organisations including public healthcare are fostering private industries towards corporate social responsibility (CSR). In particular, the authors highlighted the number of EU countries that are promoting a voluntary approach to social accountability requirements (Steurer *et al*. 2012) described by standards such as SA8000 (Social Accountability International, 2014; Llach *et al*., 2015) and AA1000 (Accountability, 2008). It seems that public organisations could also include in their tender and bid requests requirements from these standards. Linked to this specific issue, it is interesting to highlight how according to some authors (Castka and Balzarova, 2007; Castka and Balzarova, 2008; Gilbert *et al*., 2011) the different stakeholders, including public sector, are developing the entire supply chain using different accountability standards not least the ISO 26000 guideline for CSR (ISO, 2010). For these authors social accountability is a fundamental criterion not just for suppliers but also for sub-suppliers especially when they belong to emergent economies.

On the other hand, SPP literature just dedicated to public healthcare is poor. Oruezabala and Rico (2012) analysed sustainable procurement specifically in French hospitals. The authors highlighted how the French SPP is mainly based on laws and mandatory regulations. Rechel et al. (2009) however analysed how to improve sustainability in modern hospitals. According to the authors, sustainability is a matter of policy and design and the supply chain has a dynamic and active role in this design. According to the authors, environmental criteria in terms of the improvement of environmental performance in the supply chain should be the most paramount ones.

Walker and Brammer (2009) provided the first systematic and comprehensive insight into the state of sustainable procurement in public sector organisations in the United Kingdom. The results show that 15 sustainable procurement criteria are adopted by these organisations. In order of importance they are: purchasing from small suppliers, ensuring the safe, incoming movement of products, purchasing from local suppliers, ensuring that suppliers comply with child labour laws, reducing packaging material, ensuring that suppliers' locations are operated in a safe manner, asking suppliers to commit to waste reduction goals and using a life-cycle analysis to evaluate the environmental friendliness of products and packaging (Moultrie *et al*., 2016).

2.1 Sustainable procurement in the public NHS, UK and Italian Government practices and criteria

The UK as well as the Italian governments has issued some standards and guidelines for sustainable procurement. In particular, the UK government has surely developed the most detailed standards which affect all the public sector procurement activities. The standards have been devised by the Department for Environment, Food and Rural Affairs (Defra, 2012). The standards are named Government Buying Standards (GBS) and they are structured in two levels; a first one mandatory and a second one suggested as a guideline for best practices. The mandatory level is only for central government departments while it is being suggested for the other public organisations like the national healthcare. The GBS documents are also divided by sectors and according to the UK Government website (Defra, 2012) they were set out to consider environmental performance issues such as energy in use, water in use, end of life costs, reparability, upgradeability, recyclability and hazardousness of materials, used resource efficiency, quantities of scarce materials used and recycled content (Campion *et al*., 2015). The UK approach is similar to the European one; for instance, in 2008 the European Commission recommended the creation of a process for setting out common GPP criteria (European Commission, 2015b). The

criteria are divided by sectors and by core and comprehensive criteria. The core criteria rely on basic and mandatory requirements while the comprehensive ones are for public organisations which wish to purchase the best environmental products/services on the market. All the criteria linked to mandatory laws and regulations concerning environmental and safety requirements are particularly taken for granted.

Analysing the UK GBS documents it can be noticed how they broadly refer to the European GPP and European and international standards issued by CEN-CENELEC (European Committee for Standardization-European Committee for Electro-technical Standardisation), ISO (International Organisation for Standardisation) and other organisations for standardization such as the British Standard Institute. However, by their nature, the GBS documents only refer to health, safety and environmental characteristics.

Moreover, the UK Sustainable Development Unit (2015), funded by and accountable to the UK NHS, has issued a series of guidelines dedicated to commissioning and procurement. These guidelines deal with procuring for carbon reduction, greenhouse gas intensity prescription, as well as creating social value in the healthcare. However, these guidelines do not introduce any mandatory requirements for public healthcare procurement.

The Italian situation concerning sustainable procurements in the public healthcare sector is not that far from the European one. According to the Italian Ministry of the Environment and Protection of Land and Sea (2014), a number of GPP criteria are being developed in the last few years in order to be implemented in the public tender. The criteria are considered minimum, even if they are not mandatory for any public organisation. However the minimum criteria for sustainable procurement are the same core criteria developed by the European Commission (2015b), in particular requests to suppliers of improving environmental performances. However, the Italian situation is less homogeneous than the other European countries. Since the 90's Italy has changed its model of sustainable procurement from a typical bureaucratic Weberian model (Pollitt, 2009; Barzelay and Gallego, 2010), where laws and regulations were laid down to the public healthcare organisations and their supply chain, to a new public governance involving stakeholders as a whole (Osborne, 2006). In this way, citizens and taxpayers, as well as suppliers, unions and local authorities are more integrated into the governance process. However the involvement of local authorities has brought into Italy to a complex situation where there are public healthcare organisations with different criteria in terms of procurement and sustainable procurement.

Interestingly, the Italian Ministry fosters the development of sustainable criteria related both to social and environmental aspects. According to the Italian Ministry, the social criteria should be mainly based on the International Labour Organisation (ILO) recommendations. However, up until now, this represents only intent and the Italian Government do not have specific guidelines or a planned period for the issue of such documents. Ultimately, it seems that both UK and Italian public healthcare organisations have several degrees of freedom when it comes to SPP criteria.

3. Research approach and Methodology

3.1 Research questions and hypotheses

From the review of the existing literature in the field of SPP and the analysis of the UK and Italian situations, some relevant issues emerged. However, it is not that clear in what extent these issues are managed from the UK and Italian public healthcare organisations. Firstly, it seems that it is quite taken for granted that suppliers of the UK and Italian public healthcare organisations have to be in compliance with laws and mandatory standards concerning environmental and safety requirements. The following research questions emerging from the literature review are formulated:

RQ_1 – Is the request to the suppliers for the compliance of mandatory laws and regulations concerning environmental and safety requirements affected by the country?

The suppliers can be requested to be in compliance with voluntary documents for improving environmental as well as safety performances. In particular, concerning environmental performances, a number of them emerged from the literature review. As a consequence two other research questions can be formulated as:

RQ_2 – Is the request to the suppliers improving over time the environmental performance affected by the country?

RQ_3 – Is the request to the supplier improving over time the health and safety performances affected by the country?

Again two very specific criteria concern the preference of local suppliers for reducing the carbon footprint and the request of voluntary standards for product and packaging. The consequent research questions relating to local suppliers and the environment are:

RQ_4 – Is the preference of local suppliers for environmental reasons affected by the country?
RQ_5 – Is the request to the suppliers for the compliance of voluntary environmental standards related to products and packaging affected by the country?

From the literature review and the analysis of the UK and Italian situation, information has also come out regarding the suppliers and how the public healthcare is developing the supply chain. In particular, it seems that public sector organisations could include in their tender and bid requests requirements connected to social standards such as SA8000, AA1000 and ISO 26000.

Accordingly, Walker and Brammer (2009) claimed how the suppliers can also be asked about social criteria concerning issues such as child labour, forced labour, discrimination, freedom of association, workers' rights and workplace conditions. The same criteria have also been developed by the UK Sustainable Development Unit (2015) and the Italian Ministry. As a consequence, we have formulated two other specific research questions covering the social dimension of sustainability:

RQ_6 – Is the request to the suppliers for the compliance of voluntary social accountability standards affected by the country?
RQ_7 – Is the request to the suppliers for the compliance of social requirements affected by the country?

At this important stage the research questions are transformed into hypotheses to be tested. Before proceeding with a test, the null-hypothesis has to be stated. After the statement of the null hypothesis, the alternative hypothesis must be stated and this will be true if the null hypothesis is rejected. For this test, a Fisher's Exact test has been employed; according to Mehta and Patel (2011), the Fisher's is particularly suitable for making inference when data are small like in this research. Indeed, when the sample size is small, the alternative Chi-square test could give a certain number of cells where the expected count is less than 5 and the p value cannot be trusted, losing in this way its reliability. There are several Exact tests; the Fisher's may be used when both

the row and column (r x c) classifications of the contingency table are unordered. Fisher's Exact test is usually associated with a 2 x 2 contingency table. Its extension to unordered tables was first proposed by Freeman and Halton (1951). The Fisher's Exact test gives a p value contained in a certain interval. Table 1 shows the null and alternative hypotheses tested in the next section.

Table 1: Null (H_{0i}) and alternative (H_{ai}) hypotheses for the Fisher's Exact test

H_{0i}	Null and alternative hypotheses
H_{01}	No association exists between the country (UK or Italy) and the request to the suppliers for the compliance with mandatory laws and regulations concerning environmental and safety requirements
H_{a1}	The country and the request to the suppliers for the compliance with mandatory laws and regulations concerning environmental and safety requirements are not independent of one another
H_{02}	No association exists between the country (UK or Italy) and the request to the suppliers of improving over time the environmental performances in general
H_{a2}	The country and the request to the suppliers of improving over time the environmental performances in general are not independent of one another
H_{03}	No association exists between the country (UK or Italy) and the request to the suppliers of improving over time the health and safety performances in general
H_{a3}	The country and the request to the suppliers of improving over time the health and safety performances in general are not independent of one another
H_{04}	No association exists between the country (UK or Italy) and the preference of local suppliers (only for environmental reasons such as carbon footprint)
H_{a4}	The country and the preference of local suppliers (only for environmental reasons such as carbon footprint) are not independent of one another
H_{05}	No association exists between the country (UK or Italy) and the request to the suppliers for the compliance with voluntary environmental standards related to products and packaging
H_{a5}	The country and the request to the suppliers for the compliance with voluntary environmental standards related to products and packaging are not independent of one another
H_{06}	No association exists between the country (UK or Italy) and the request to the suppliers for the compliance with voluntary social accountability standards (e.g. ISO 26000, SA 8000, AA1000, etc.)
H_{a6}	The country and the request to the suppliers for the compliance with voluntary social accountability standards (e.g. ISO 26000, SA 8000, AA1000, etc.) are not independent of one another
H_{07}	No association exists between the country (UK or Italy) and the request to the suppliers for the compliance with social requirements such as child labour, forced labour, discrimination, freedom of association, etc.
H_{a7}	The country and the request to the suppliers for the compliance with social requirements such as child labour, forced labour, discrimination, freedom of association, etc. are not independent of one another

3.2 Methodology

The research is mainly based on a quantitative research involving a survey carried out with 64 public hospitals and public organisations dedicated to healthcare consisting of 32 each from UK and Italy. Quantitative data collection method was adopted to obtain a comprehensive view (Opoku *et al*., 2016) of SPP practice across the UK and the Italian public health sector. The survey respondents included purchasing managers, procurement managers and buyers from the sampled organisations. Surveys are particularly useful to measure opinions about a subject by making opinions less subjective (Bryman, 2004). According to Bryman (2004), survey design is structured in six steps: research questions; transforming the questions into hypotheses, sampling, measurement, data collection and analysis, interpretation and generalisation.

The seven hypotheses of the previous section have been transformed into seven questions in designing the questionnaire in Annex 1. From the different kinds of available question styles the Likert's scale has been chosen. The Likert's scale can be used for validation by means of several statistical tests. Because the scale is cumulative the final score is computed by counting the number of answers. In this research, the respondents can choose one of the following answers to the questions in the questionnaire:

1 = Not important; 2 = Slightly important; 3 = Moderately important; 4 = Important and 5 = Very Important. Annex 1 show the questionnaire based on the Likert scale that has been administered to the purchasing managers of the selected public healthcare organisations.

A Fisher's Exact test has been used in order to validate the hypotheses in Table 1. Following the Fisher's Exact test, the Mann-Withney U test has been employed for being more confident of the statistical outcome of the Fisher's Exact test.

Fisher's Exact test does not provide measures of the strength of association between the variables; as a consequence, a Cramer's V test has been employed for adding more information.

Furthermore, a non-parametric Mann-Withney U test has been used for comparing the results. In particular, the Mann-Withney test is not influenced by the kind of distribution and can be used for ordinal data, like data from a Likert's scale, with the assumption of having independent samples (Bryman and Cramer, 2011). In this research, the two samples from the UK and Italian respondents are obviously independent. The Mann-Withney U test validates the specific null-hypothesis H_{0Ui} for each of the seven questions:

H_{0Ui} - *The medians of the Likert's distribution are the same across the two countries.* The alternative hypothesis is that there are statistically significant differences between the two countries in terms of Likert's distribution.

Lastly, the quantitative results from the questionnaire have been expanded by suggestions and comments collected from the respondents through the notes after each question. In this way the questionnaire also produced qualitative data; the practice of coding data (Lofland and Lofland, 1995) was used to assign labels to classify and assign meaning to parts of the information. These kinds of data are very important for completing and investigating the part of the survey dedicated to the validation of the hypotheses in a triangulation inquiry (Bryman, 2006).

4. Data analysis and discussions

The report in Table 2 shows the results for each answer of the questionnaire using the Fisher's Exact test through IBM-SPSS software. The table shows in particular the *p* value within the lower and upper bound of the interval. The Fisher's test gives the researcher the opportunity of determining whether the observed pattern within the data could be random. If the pattern is not random, then an association exists between the two variables. The null hypotheses H_{0i} have been stated in Table 1. For instance, the first one H_{01} is: 'No association exists between the country (UK or Italy [first variable]) and the request to the suppliers [second variable] of the compliance with mandatory laws and regulations concerning environmental and safety requirements'.

A *p* value of less than 0.05 (5%) has been set as the cut-off point at which to reject the null hypothesis; in this case the alternative hypothesis H_{ai} becomes true. This means that there is a 5% chance of being wrong or that the association is not due to a real association between the two variables but to chance. For instance, the result for the second question produces a *p* value between 0.022 and 0.030. Because the *p* value is in both cases less than 0.05 we can reject the null hypothesis shown in Table 1 concluding that there is an association between the variables or the request to the suppliers is affected by the country.

Table 2: Statistical results from the Fisher's Exact test

Id	Lower Bound	Upper Bound	H_{0i}	Conclusions in short
1	0.134	0.152	Accepted	Not affected by the country

2	0.022	0.030	Rejected	Request to the supplier affected by the country
3	0.115	0.132	Accepted	Not affected by the country
4	0.000	0.000	Rejected	Preference of local suppliers affected by the country
5	0.000	0.000	Rejected	Request to the supplier affected by the country
6	0.000	0.000	Rejected	Request to the supplier affected by the country
7	0.529	0.555	Accepted	Not affected by the country

As previously discussed, the strength of association is measured by Cramer's V test; the Cramer's V varies from 0 (no association) to 1 (complete association) and the results are shown in Table 3. For instance, the strength of the association for the second question, according to Table 3, can be considered as moderate, while the sixth one is the strongest.

Table 3: Strength of association according to the Cramer's V test

Id	Cramer's V	Association
1	0.252	Moderate
2	0.397	Moderate
3	0.315	Moderate
4	0.747	Strong
5	0.690	Strong
6	0.782	Strong
7	0.229	Moderate

Table 4 shows the statistical results from the Mann-Withney U test. All the *p* values show that there is a complete agreement with the statistical results from Fisher's Exact test.

Table 4: Statistical results from the Mann-Withney U test

Id	*p* value	H_{0U}	Agreement with Fisher's Exact test
1	0.205	Accepted	Yes
2	0.005	Rejected	Yes
3	0.297	Accepted	Yes
4	0.000	Rejected	Yes
5	0.042	Rejected	Yes
6	0.000	Rejected	Yes
7	0.602	Accepted	Yes

However, the *p* values of the two tests do not provide detail on the nature of the relationship between the variables, therefore they should be discussed along with the contingency table results (Hinton et al., 2014). Table 5 shows the relationship between the two categorical variables and helps the interpretation of the phenomena behind the *p* value referring to the frequencies and percentages for the different values of the Likert's scale across the countries.

Table 5: Contingency tables of the categorical variables

Question	Country	Likert's scale				
		1	2	3	4	5
1	Italy	0 (0)	0 (0)	0 (0)	7 (21.9%)	25 (78.1%)
	UK	0 (0)	0 (0)	1 (3.1%)	2 (6.3%)	29 (90.6%)
2	Italy	1 (3.1%)	5 (1.6%)	15 (46.9%)	6 (18.8%)	5 (15.6%)
	UK	0 (0)	0 (0)	11 (34.4%)	9 (28.1%)	12 (37.5%)
3	Italy	1 (3.1%)	1 (3.1%)	4 (12.5%)	12 (37.5%)	14 (43.8%)
	UK	0 (0)	0 (0)	11 (34.4%)	12 (37.5%)	9 (28.1%)
4	Italy	6 (18.8%)	12 (37.5%)	8 (25%)	5 (15.6%)	1 (3.1%)
	UK	1 (3.1%)	0 (0)	2 (6.3%)	14 (43.8%)	15 (46.9%)
5	Italy	6 (18.8%)	16 (50%)	7 (21.9%)	2 (6.3%)	1 (3.1%)
	UK	1 (3.1%)	0 (0)	21 (65.6%)	8 (25%)	2 (6.3%)
6	Italy	14 (43.8%)	11 (34.4%)	4 (12.5%)	2 (6.3%)	1 (3.1%)
	UK	1 (3.1%)	0 (0)	8 (25%)	11 (34.4%)	12 (37.5%)
7	Italy	1 (3.1%)	1 (3.1%)	3 (9.4%)	14 (43.8%)	13 (40.6%)
	UK	0 (0)	2 (6.3%)	7 (21.9%)	13 (40.6%)	10 (31.3%)

Moreover, the qualitative comments from the respondents gave some insight on how to better investigate the phenomena. A discussion and the analysis of the tested hypothesis is presented in the following sub-sections;

4.1 Mandatory laws and regulations concerning environmental and safety requirements

According to the *p* value bounds in Table 1 and Table 4, the H_{01} and the H_{0U1} null hypotheses have been accepted. Consequently, it can be claimed that the request to the suppliers of the compliance with mandatory laws and regulations concerning environmental and safety requirements is not affected by the country. Indeed, looking at the contingency tables, it can be noticed how both the Italian and UK respondents answered firmly 4 (important) and 5 (very

important) with no answers to 1 (not important) and 2 (slightly important). Therefore, this issue is particularly important for the public healthcare of both the countries. According to some respondents, especially Italian ones, asking the suppliers for being in compliance with mandatory laws and regulations is something taken for granted. For instance, according to these respondents, when we come to buying products and services in the EU, there are many mandatory requirements and standards connected to the CE (Conformité Européene that literally means European Conformity) marking as well as other directives concerning environmental impacts and hazardousness of the product and processes.

4.2 Improvement of environmental performance over time

If the result concerning the first hypothesis is surely taken for granted from both countries, on the other hand the second hypothesis sets aside some surprises. First and foremost, according to the *p* values bound in Table 1 and Table 4 the H_{02} and H_{0U2} null hypotheses have been rejected. Consequently, this time the country can influence the request to suppliers in terms of improvement of environmental performance over time. Looking at the contingency Table 5, it is clear that while the Italian public healthcare is more neutral on it (46.9% of threes, 18.8% of fours and 15.6% of fives), the UK respondents are more resolved towards 4 (28.1%) and 5 (37.5%). Indeed, from Cramer's V Table 3, we can see that the association between the country and Likert's values is moderate. Reading the notes left from the Italian respondents, 8 of them believe that basically is a matter of price reduction. Indeed, this could lead to the detriment of asking something about environmental performance improvement. A couple of Italian respondents highlighted also how sometimes it could be just a cultural issue. Other respondents stated that sustainability is an important principle but there is a lack of culture especially when they have to ask specific environmental performances to suppliers and then evaluate all data and information over time.

Lastly, a couple of Italian respondents and one UK respondent highlighted how among the several environmental performances managed and improved by the suppliers, energy saving is one of the most important that the suppliers should pursue. The respondents pointed out how suppliers could implement the ISO 50001 standard (Jovanović and Filipović, 2016; Rebelo *et al*., 2016) that describes a management system which leads towards cutting energy costs and greenhouse gas emissions.

4.3 Improvement of health and safety performance over time

Results from the third hypothesis are quite similar to the results of the first one. The *p* values are both higher than the 0.05 cut-off, therefore the H_{03} and the H_{0U3} null hypothesis have been accepted and there is no influence by the country. Indeed, from the contingency Table 5, it can be seen for instance that, there is the same number of answers to 4. Comments from the respondents to question 1 and 3 are similar. Health and safety are taken for granted and in particular one Italian respondent highlights how the strict European legislation forces companies towards a continuous improvement of health and safety performances as well.

4.4 Preference of local suppliers for environmental reasons

The *p* values of the fourth hypothesis are close to zero, therefore the H_{04} and the H_{0U4} null hypotheses have been rejected and the country affects the preference of local suppliers. The contingency Table 5 explains better the phenomenon; indeed, it is clear how the answers from the two countries are rather different. Indeed, from table 3 we have a strong association in terms of Cramer's V equal to 0.747. Italy has more ones and twos (not important and slight important) while the UK has more fours and fives (important and very important). That means that the UK prefers, when possible, local suppliers instead than further ones. Indeed, we found 5 comments from the UK respondents very positive about the possibility of cutting down carbon footprint using local suppliers but also comments related to difficulties in finding local suppliers for specific products. Moreover, there are one comment from the UK and six from Italy that highlight how often tenders and bids are structured for favouring the price of products rather than environmental benefits. From one Italian respondent emerged again that the reason could be more linked to cultural issues rather than technical ones. Similar to the second hypothesis concerning the improvement of environmental performances over time, the respondent highlighted a lack of knowledge about the particular subject of carbon footprint.

Another interesting note from the Italian sample suggests that a supplier evaluation based on the carbon footprint introduces transparency and more trust within the community. Indeed, according to this Italian respondent, choosing local suppliers has a positive impact on local stakeholders. However, it is not clear if this positive phenomenon could be also related to environmental issues.

4.5 Voluntary environmental standards related to products and packaging

Once more, the *p* values of the fifth hypothesis are close to zero, therefore the H_{05} and H_{0U5} null hypotheses have been rejected and the country affects the preference of standards for products and packaging. However, looking at the contingency table it can be noticed that certainly the distributions of the answers are different between the two countries even if not so accentuated. The UK tends to have slightly more fours and fives (important and very important) than Italy but the UK has a significant 65.6% of threes as well; furthermore, Italy has a significant 50% of twos (slightly important). In attempt to investigate the reasons why the UK is slightly more in favour of asking to the suppliers for the use of voluntary standards for products and packaging, something of interest comes out. In particular, there are two notes from the UK respondents which emphasise the possible use of packaging in compliance with some voluntary standards (Giacomarra *et al*., 2016) issued by the British Standards Institution (BSI) and the British Retail Consortium (BRC). Therefore, it seems that in the UK the availability of environmental specific standards could make the difference. Indeed, the BSI is often considered a very active and ground-breaking body for standardisation; many standards issued by the BSI are then recognised by the International Organisation for Standardization (ISO) and many other European technical bodies.

4.6 Compliance with voluntary social accountability standards

The H_{06} and the H_{0U6} null hypotheses have been rejected being the *p* value almost equal to zero. The country affects the request to suppliers of the adoption of a voluntary social accountability standard such as ISO 26000, SA8000 or AA1000. In particular this time, it is very clear from the contingency table that the UK public health organisations are adopting these standards in their requests to suppliers, while the Italian organisations are not. Moreover, Cramer's V is very high equal to 0.762 meaning this a strong correlation. There are some comments from the Italian respondents which can better explain the choices of the Italian health organisations. For instance, one respondent claimed that these voluntary standards are probably more used by large manufacturing companies that necessarily act to prevent ethical scandals due the nature of supply chain. For a public hospital the consequences of ethical scandals in the supply chain are more mitigated and surely does not jeopardise the business like that of a listed company in the stock market. In any case, another Italian respondent highlighted the importance of the SA8000 standard as a vehicle for improving all the supply chain sustainability. According to this respondent, the public hospital which he/she belongs is used to ask for self-declarations of SA8000 compliance to the suppliers. However, another Italian respondent highlighted some criticisms

concerning how to assess the real implementation of these standards from the supplier; for doing this the public health sector organisation should have a specialised auditing team who can assess the suppliers' premises all around the world (Heras-Saizarbitoria et al., 2013).

4.7 Compliance with social requirements

According to the *p* values bound in Table 1 and Table 4 the H_{07} and H_{0U7} null hypotheses have been accepted. Consequently, it can be claimed that the request to the suppliers of the compliance with social requirements such as child labour, forced labour, discrimination and freedom of association is not affected by the country. Indeed, looking at the contingency tables, it is clear how respondents from both countries answered a majority of fours and fives (important and very important) and just few ones and twos.

Both countries reckon that these requirements are fundamental and similarly to the first and third hypotheses, it tends to be something taken for granted even by laws and regulations. For instance, there are six comments from the Italian respondents which emphasise how these requirements are legal requirements linked to specific Italian laws. Interestingly, four Italian respondents in their notes pointed out how important it is to ask the same social requirements also to the sub-suppliers. However, it is often impossible to assess sub-suppliers and even know their names and locations. Governments have been acknowledged across the globe as key drivers towards achieving a more sustainable society. Making the right procurement decision in the public sector can have great reaching environmental, economic and social impacts. The volume of procurement activities within the UK and Italian public health sector is so significant that SP strategies could be adopted as part of governments drive to tackle climate change and ensure value for money for the public purse.

5. Conclusions

The UK and Italy are adopting standards and performance criteria for a SPP in the public healthcare organisations which are mainly linked or stem from EU legislations and regulations. Therefore, not relevant differences in the UK and Italian practices and criteria for sustainable procurement in the public healthcare should be expected. A questionnaire designed as part of the study was administered to 32 Italian procurement professionals and 32 UK procurement in order to test seven hypotheses concerning SPP criteria derived from a literature review.

As a matter of fact, the statistical results show some unexpected and interesting results in terms of differences between the two countries. While the UK organisations seem to have a propensity for requesting to suppliers an improvement of environmental performances over time, including carbon footprint, the Italian organisations seem more focused on the respect of just the mandatory laws and regulations concerning environment and safety. According to the Italian respondents it is mainly a matter of trade-off between product costs and performances or even a matter of culture within the organisations. On the other hand, the UK respondents believe more that any sustainable practices should also be cost effective.

Other interesting differences lie in the requests to the suppliers of the compliance with voluntary standards related to packaging. This time it seems that the UK organisations are more keen on using their national and relevant standards issued for instance by the BSI or BRC. Moreover, the UK organisations tend to ask the suppliers for some sort of compliance with social accountability standards such as ISO 26000, SA8000 and AA1000. In this case the Italian organisations seem not interested in such standards as it is believed to be more suitable for large manufacturing companies vulnerable to ethical scandals. On the other hand, there are no differences in terms of request to the suppliers of requirements related to health and safety and social requirements such as child labour, forced labour, discrimination and freedom of association.

The qualitative notes from the respondents introduce some interesting managerial and practical implications for the public healthcare organisations. For instance, the respondents suggest how it is not worth it focusing so much on environmental, health and safety and social requirements which respect is due by law. The respondents also suggest the request to the suppliers of a compliance with the ISO 50001 standard dedicated to energy management and household gas reduction. Moreover, due to difficulties in reaching and assessing sub-suppliers, the respondents give advice to make more public organisations responsible and accountable for the suppliers of their own suppliers.

6. Avenues for further research

The limitations of this research as well as the qualitative notes from the respondents open avenues for further research. First of all, the research is just limited to two countries; researchers should compare SPP criteria among other European countries. For instance, it would be interesting to have a complete insight of the European situation, including external countries but with similar NHS such as Iceland, Norway and Switzerland. The hypotheses and criteria come from a literature

review. Thus, it could happen that other relevant criteria may have been missed which are in use at the same or in different countries. These different criteria could be compared with or added to the findings from this research. A qualitative study through the use of interviews could provide such relevant information not found in literature.

It is recommended that future research should investigate how in some circumstances in the SPP there would be a trade-off between costs of the product and environmental criteria. What are the drivers behind this? Some clues lead us toward cultural issues and a lack of knowledge within public healthcare organisations. In any case, a deeper and broader research investigation is required. The issue of standards also needs more research. Future research should analyse how and in what measure national and international voluntary standards can affect SPP. Indeed, it seems that widespread standards, like the ones dedicated to packaging, can affect criteria for SPP even if they are completely voluntary and delimited to a particular country. Another issue of interest which could be further investigated is connected to the increase of trust from the community when the public organisation implements SPP carbon footprint criteria. Again, it is important to understand the drivers behind this phenomenon. For instance trying to investigate if the trust from the community is only related to the preference of local suppliers or there are also environmental concerns. Lastly, the issue of ethical scandals within the supply chain deserves specific research. For instance, researchers should try to investigate if the public sector is really not affected by these scandals. Furthermore, it could be interesting to evaluate whether the drivers for taking the scandals into account are just related to a possible negative economic impact on the business.

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Annex 1: The questionnaire administered to the purchasing managers of the healthcare organisations

Using a scale of 1= Not important, 5 = Very important, please rate each of the following questions in regards to how important it is for your hospital for developing a sustainable procurement.	
1 Requests to the suppliers for the compliance with mandatory laws and regulations concerning environmental and safety requirements	1 _ 2 _ 3 _4 _ 5
Your notes on the question:	
2 Requests to the suppliers of improving environmental performance in general over time (for instance greenhouse gas reduction, energy and water in use, end of life, recyclability, hazardousness of materials, etc.)	1 _ 2 _ 3 _4 _ 5
Your notes on the question:	
3 Requests to the suppliers of improving the health and safety performance in general over time	1 _ 2 _ 3 _4 _ 5
Your notes on the question:	
4 Preference of local suppliers (only for environmental reasons such as the carbon footprint)	1 _ 2 _ 3 _4 _ 5
Your notes on the question:	
5 Requests to the suppliers for the compliance with voluntary environmental standards related to products and packaging	1 _ 2 _ 3 _4 _ 5

Your notes on the question:

6 Requests to the suppliers for the compliance with voluntary social accountability standards (e.g. ISO 26000, SA8000, AA1000, etc.) 1 _ 2 _ 3 _4 _ 5

Your notes on the question:

7 Requests to the suppliers for the compliance with social requirements such as child labour, forced labour, discrimination, freedom of association, etc. 1 _ 2 _ 3 _4 _ 5

Your notes on the question: